PROJECT NUMBER: 2525
PROJECT TITLE: Tobacco Chemistry
PROJECT LEADER: R. R. Izac
PERIOD COVERED: October, 1988

I. NATURAL PRODUCTS CHEMISTRY

A. **Objective**: To isolate, identify and/or analyze natural compounds with major emphasis on tobacco and tobacco products.

B. **Results**: 1.) A sample of nicotine was isolated from Premier flavor beads and purified for T. Sanders. The nicotine was identified as natural or l- nicotine by nmr (R. Bassfield), optical rotation (J. Paine) and ORD (T. Howell). 2.) Samples of cigarette paper, which contained spots were analyzed for solanesol by TLC. Dichloromethane extracts of all samples looked identical, containing solanesol as a major component and other tobacco components. A second batch of Art tobacco and a sample of the contents of a dry ice trap collected from treated tobacco (samples obtained from S. Wren) were analyzed. GC (David Douglas) and TLC of the tobacco indicated that there wasn't any observable difference between the treated and control tobaccos. The material collected from the trap was centrifuged to yield a small amount of wax and further extracted with dichloromethane to yield a small amount of tobacco volatiles. The remaining aqueous material contained an amount of propylene glycol and a lesser amount of acetic acid. These fractions were analyzed by J. Naworal using MS. 3.) As part of a collaboration with Project 6906, a number of separation schemes were discussed. One of these involved separation of Burley S1 (BuS1) fraction using a gel column (TSK Toyopearl HW 40F). A MPLC column was prepared and about five grams of BuS1 was separated into two fractions.

C. **Plans**: Continue analysis of causative agent from the Art tobacco cigarette paper and continue separation of BuS1.

D. **References**:

1. Izac, R. Notebook No. 8632.
2. Core, M. Notebook No. 8608.

II. LOW NICOTINE

A. **Objective**: To examine characteristics of unextracted nicotine.

B. **Results**:
1.) Grafted tobacco on a tomato rootstock appears to contain only extractable nicotine. Earlier grafts did not take and four more grafts were prepared.

C. **Plans**: Continue to investigate genetic and cultural factors which influence the amount of unextracted nicotine in tobacco materials.

2022221556

Source: https://www.industrydocuments.ucsf.edu/docs/flkm0000

D. **References**:
1. Izac, R. Notebook No. 8632.
2. Bass, R. Notebook No. 8607.
3. West, G. Notebook No. 8559.

III. GREENHOUSE STUDIES

A. **Objective**: To maintain the R&D greenhouses, to conduct plant research studies and to provide greenhouse-grown tobacco materials for support of other R&D programs.

B. **Results**: 1.) The hydroponic Burley 21 plants of Group 15 are showing good growth. All preparations for Group 16 including the transplanting of Burley 21 plants have been made. These plants are being grown for Project 1904. 2.) The Burley 21/N. glutinosa grafts were harvested. The purpose of this is to provide a plant which boosts the production of nornicotine. 3.) The greenhouse maintenance operations including seeding, transplanting, nutrient solution preparation and other cultural tasks were completed. 4.) The experimental flue-cured and Oriental tobacco grown at Whiteville Research Station are still being cured.

C. **Plans**: Maintain production of fresh root tissue by hydroponic culture. Monitor the field plots as needed.

D. **References**:
1. Bass, R. Notebook No. 8607.
2. West, G. Notebook No. 8559.

IV. SUPPORT ACTIVITIES

A. **Objective**: To provide requested assistance for special projects.

B. **Results**: 1.) An investigation into the synthesis of poly(isopropenyl alcohol) was started. Poly(isopropenyl acetate) was reacted with freshly prepared sodium methoxide in methanol to give a product which is consistent with poly(isopropenyl alcohol). poly(isopropenyl alcohol) was reacted with menthyl chloroformate to prepare poly(menthyl isopropenyl carbonate), polymic, by another route. 2.) The 1988 SC Flue-Cured variety evaluation display and the NC Flue-Cured variety evaluation display were attended. Tobacco leaf was evaluated in conjunction with PM Leaf Department personnel. Additional samples of "cherry red" tobacco were obtained for evaluation. 3.) Seven handmade cigarettes containing a central core of balsa wood were fabricated and will be compared to cigarettes made previously from pith wood.

C. **Plans**: Continue to investigate preparation of poly(isopropenyl alcohol) and polymic.

D. **References**:
1. Izac, R. Notebook No. 8632.
2. Bass, R. Notebook No. 8607.

2022221557

Source: https://www.industrydocuments.ucsf.edu/docs/flkm0000